**P530/2**

**BIOLOGY**

**PAPER**

(THEORY)

**2HRS 30MIN**

**Uganda Advanced Certificate of Education**

**END OF YEAR EXAMINATIONS 2019**

**S.5 BIOLOGY PAPER TWO**

**2 hours 30 minutes**

**INSTRUCTIONS TO CANDIDATES**

* Attempt question one in section A plus three others in section B
* candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labeled diagrams where necessary

**SECTION B (40MARKS)**

1. An ecologist carried out an investigation to determine the changes in population size of organisms in *Kidepo national park* with respect to factor of time. The following data was obtained, use it to answer the questions that follow.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time (Days) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Number of prey | 850 | 8450 | 8200 | 7400 | 3800 | 2900 | 1800 | 1600 |
| Number of predators | 0 | 500 | 2000 | 5850 | 6500 | 4500 | 2000 | 1000 |

1. Using the same axes, present the above information graphically. (12 marks)
2. Explain the shapes of the graphs in 1(a) above. (09 marks)
3. From the graph, find after what time will the numbers of the two organisms be equal and what are numbers then? (03 marks)
4. (i) How can the above relationship be used to control pests? (05 marks)

(ii) Draw a sketch graph to show the curves which could be obtained if the same number of organisms was introduced at the same time. (05 marks)

1. The size of a population may be limited by density dependent factors or density independent factors. Explain how these two types of factors operate to limit population size. (05 marks)

**SECTION B (60 MARKS)**

**2.** Describe the structure, functions and interactions of cellular organelles involved in protein synthesis. (20 marks)

3. (a) Define saprobionts. (02 marks)

(b) Explain why, in most ecosystems less than 5% of sunlight energy is converted into chemical energy by green plants. (08 marks)

(c) Give an account of the roles of bacteria in the nitrogen cycle. (10 marks)

4. (a) Describe the structure of the areolar tissue in relation to the function of the following;

1. Squamous epithelium (03marks)
2. Parenchyma tissue (05marks)
3. Collenchyma tissue (05 marks)
4. Outline the functions of the following cells as regards bone physiology.
5. Osteoblasts (02 marks)
6. Osteoclasts (04 marks)

5.

1. Describe the structure of a synapse. (03 marks)
2. Explain the factors that determine the speed at which an impulse is transmitted.

(07 marks)

1. How is a nerve impulse propagated? (10 marks)

6. (a) Describe the reactions of glycolysis and explain what happens to allow glycolysis to continue when oxygen is not available. (08 marks)

(b) What are the essential features of Kreb’s cycle? (05 marks)

(c) Give an account of the role of mitochondria in cellular respiration. (07 marks)

**END**

*“For those who value quality!”*